

IMPROVEMENT OF *IN VITRO* ANTHHER CULTURE OF CEREALS AND UTILIZATION IN CR LTD.'S BREEDING PROGRAMS

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In modern plant breeding and research programmes, the importance of doubled haploid (DH) plant production methods is incontrovertible. These methods (chromosome elimination, anther- and isolated microspore culture) serve the quickest way for the production of homozygous lines to accelerate the plant breeding and applied research. In Biotechnology Laboratory of CR Ltd.'s, the improvement of *in vitro* androgenesis of crop plants have been in the focus of research for more decades. Recently, the *in vitro* anther culture methods are applied routinely for production of thousands of DH plants in cereals (common and spelt wheat, triticale, barley and rice). The produced DH lines have been integrated in CR's breeding programmes. After a strong selection system, the best lines can take part in Hungarian national tests (NÉBIH). In 2021, a new DH variety 'GK Déva' have been protected. However, the efficiency of *in vitro* anther culture is low in tetraploid *Triticum* species for example durum wheat, and the *in vitro* androgenesis induction remained a scientific challenge in einkorn (*Triticum monococcum* L.). Androgenesis was induced in *in vitro* anther culture of einkorn and the development of microspore – derived ELS was observed in anther cultures. Furthermore, some green and albino plantlets were regenerated from the microspore – derived ELS. The regenerated green plantlet was determined as a haploid plant by flow cytometric analyses.

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